Contact Dermatitis in Children

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Contact dermatitis

Skin inflammation after exposure to allergens or irritants

• Allergic contact dermatitis
  ➢ *delayed-type hypersensitivity response with a skin inflammation mediated by hapten-specific T cells*

• Irritant contact dermatitis
  ➢ *non-specific inflammatory dermatitis*
    ➢ *friction*
    ➢ *over-exposure to water, or chemicals such as acids, alkalis, detergents and solvents*
Allergy (immediate) Type I and (delayed) Type IV

Immediate type
• Contact urticaria
• Urticaria
• Angioedema
• Anaphylaxis

Delayed type
• Dermatitis

Pathophysiology:
• sensitization phase
• elicitation phase
Emollients: unwanted ‘hidden’ ingredients

Emollients may compensate for barrier defects

Table 1 Some ingredients of emollients and their potential risks

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emulsifier</td>
<td>Wool wax and wool wax alcohols, Contact sensitizers, Contact allergen and irritant</td>
</tr>
<tr>
<td>Moisturizer</td>
<td>Glycerin, Well tolerated, Young children: stinging, Suitable for children aged 3 yr and older</td>
</tr>
<tr>
<td>Humectant, Solvent</td>
<td>Propylene glycol, Irritant contact dermatitis, allergic contact dermatitis, and non-immunologic contact urticaria</td>
</tr>
<tr>
<td>Preservatives</td>
<td>Diazolidinyl urea, Imidazolidinyl urea, Irritant contact dermatitis, and non-immunologic contact urticaria</td>
</tr>
<tr>
<td>Fragrances</td>
<td>MDBGN, methyl dibromoglutaronitrile, MCI, methylchloroisothiazolinone, and methylisothiazolinone.</td>
</tr>
</tbody>
</table>

Be aware of unwanted ‘hidden’ ingredients

Use emollients!

- However:
  - Rising trend of ‘natural’ herbal remedies
  - Increased awareness of the allergic potential of plant derivates

Take this into account when recommending topical products!!

- Note: ‘hidden’ allergens
  
  For example: Compositae
  - Sesquiterpene lactone
  - Bisabolol: a sesquiterpene alcohol

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**Ingredients**

*Active Ingredient - Purpose.* Petrolatum (41%) - Skin Protectant (Ointment) Treatment or Prevention of Diaper Rash.

*Inactive Ingredients:* Mineral Oil, Ceresin, Lanolin Alcohol, Panthenol, Glycerin, Bisabolol.
patients with atopic dermatitis were significantly more likely to be allergic to fragrances, including balsam of Peru, than patients with nonatopic dermatitis.
Girl 12 months old

Since several days; Diarrhea; Painful
No dermatitis in the folds

Contact dermatitis: irritant

Urine (urea)

Moisture, Friction

Presence of fecal urease

Increased stool lipase and protease activities

Increased skin permeability and skin irritation

Fig. 1. Pathogenesis of irritant diaper dermatitis.

ACD may result from

- potential allergens in diaper itself
  - disperse dyes
- topical used products by caregiver
  - emulsifier (SSO), fragrances, preservatives

**TABLE 1. Highlighted Allergens Reportedly Associated with Diaper Dermatitis**

<table>
<thead>
<tr>
<th>Allergen</th>
<th>Common use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorbitan sesquioleate</td>
<td>Emulsifier in topical preparations</td>
</tr>
<tr>
<td>Fragrances* [fragrance mix 1 and balsam of Peru]</td>
<td>Chemicals added to impart pleasant odor</td>
</tr>
<tr>
<td>Disperse dye</td>
<td>Dye Chemicals to brighten colors</td>
</tr>
<tr>
<td>Cyclohexlthiophalimide</td>
<td>Rubber additive to prevent oxidation</td>
</tr>
<tr>
<td>Mercaptobenzothiazole*</td>
<td>Rubber accelerator</td>
</tr>
<tr>
<td>Iodopropylcarbamate</td>
<td>Preservative in baby wipes</td>
</tr>
<tr>
<td>Bronopol</td>
<td>Preservative in baby wipes</td>
</tr>
<tr>
<td>p-tert-butyl-phenol-formaldehyde*</td>
<td>Glue</td>
</tr>
</tbody>
</table>


Smith WJ, Jacob AE. The role of allergic contact dermatitis in diaper dermatitis. Pediatric Dermatology 2009;26(3):369-70
Contact Dermatitis in Children

- Allergic or irritant - toxic
- Immediate type or delayed type

Indication for Patch tests
- ‘baseline series’ of allergens
  - Useful to test samples of own material in addition to commercially available allergens

- Social media: ‘challenges’
Contact dermatitis in children

• **Feel like Sherlock Holmes**

• **Listen to the patient**, he is telling you the diagnosis

• It is **right in front of your eyes** many times but we have biases and miss it too often

• **Allergic contact dermatitis in children is not rare**

• Perform patch tests in every case of **chronic recurrent or therapy-resistant eczema in children**
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